

CLAIMS

1. A fuel cell stack formed by stacking together a plurality of cells (1), comprising:

a fuel gas supply manifold (4) provided so as to extend through the cells (1) in the stacking direction and adapted to introduce a fuel gas to the cells (1);

a fuel gas exhaust manifold (7) provided so as to extend through the cells (1) in the stacking direction and adapted to collect surplus fuel discharged from the cells (1);

a bypass passage (9) connecting a downstream end of the fuel gas supply manifold (4) to the fuel gas exhaust manifold (7); and

a valve 11 that opens and closes the bypass passage (9),

wherein, when the fuel gas starts to be supplied to the fuel gas supply manifold (4), the valve (11) is opened to thereby effect scavenging on most of the air in the fuel gas supply manifold (4) through the bypass passage (9) by the fuel gas supplied without causing the air to flow by way of the cells (1).

2. The fuel cell stack according to Claim 1,

wherein the bypass passage (9) is connected to an upstream end of the fuel gas exhaust manifold (7).

3. The fuel cell stack according to Claim 1,

wherein the bypass passage (9) is connected to a downstream end of

the fuel gas exhaust manifold (7).

4. The fuel cell stack according to any one of Claims 1 through 3,
wherein the bypass passage (9) is formed so as to have a passage area large enough to allow flowing of an amount of fuel gas not less than the total amount of fuel gas flowing through the cells (1).

5. The fuel cell stack according to Claim 1, further comprising a pair of end plates (2) and (8) respectively arranged at both ends of the cells (1) stacked together,

wherein the bypass passage (9) is provided in the end plate (8) situated at the downstream end of the fuel gas supply manifold (4).

6. The fuel cell stack according to Claim 1, further comprising a controller (12) that controls the opening and closing of the valve (11),

wherein the controller (12) keeps the valve (11) open for a period of time required for performing scavenging on the air in the fuel gas supply manifold (4).

7. The fuel cell stack according to Claim 6, further comprising a voltage sensor (21) that detects the voltage of the cells (1) on the downstream side of the fuel gas supply manifold (4),

wherein the controller (12) keeps the valve (11) open until the voltage detected by the voltage sensor (21) attains a predetermined voltage since the start of the supply of fuel gas to the fuel gas supply manifold (4).